



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,115	03/19/2004	John F. Conley JR.	SLA0843	8510
27518 7590 02/08/2007 SHARP LABORATORIES OF AMERICA, INC 5750 NW PACIFIC RIM BLVD CAMAS, WA 98642			EXAMINER MCPHERSON, JOHN A	
			ART UNIT	PAPER NUMBER
			1756	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary
for Applications
Under Accelerated Examination**

Application No.

10/805,115

Applicant(s)

CONLEY ET AL.

Examiner

John A. McPherson

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Since this application has been granted special status under the accelerated examination program,
NO extensions of time under 37 CFR 1.136(a) will be permitted and a SHORTENED STATUTORY PERIOD FOR
REPLY IS SET TO EXPIRE:

ONE MONTH OR THIRTY (30) DAYS, WHICHEVER IS LONGER,
FROM THE MAILING DATE OF THIS COMMUNICATION – if this is a non-final action or a *Quayle* action.
(Examiner: For FINAL actions, please use PTOL-326.)

The objective of the accelerated examination program is to complete the examination of an application within twelve months from the filing date of the application. Any reply must be filed electronically via EFS-Web so that the papers will be expeditiously processed and considered. If the reply is not filed electronically via EFS-Web, the final disposition of the application may occur later than twelve months from the filing of the application.

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
2) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 3) ☒ Claim(s) 1-19 is/are pending in the application.
3a) Of the above claim(s) 16-19 is/are withdrawn from consideration.
4) ☐ Claim(s) _____ is/are allowed.
5) ☒ Claim(s) 1-15 is/are rejected.
6) ☐ Claim(s) _____ is/are objected to.
7) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 8) ☐ The specification is objected to by the Examiner.
9) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
10) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 11) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
• See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/19/04
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-15, drawn to a method of forming a microlens structure, classified in class 430, subclass 321.
 - II. Claims 16-19, drawn to a CCD array, classified in class 257, subclass 432.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process, such as a process utilizing a single etching step to form the lens shapes.
3. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

Art Unit: 1756

4. During a telephone conversation with David C. Ripma on 1/31/07 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-15 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 7,029,944.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the present application, drawn to a method of forming a microlens comprising two isotropic etching steps, completely encompass (i.e. are anticipated by) the claims of the patented invention, which are drawn to the same process further comprising the step of providing a CMP stop layer.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,824,236 to Hawkins et al. (Hawkins) in view of US 4,347,918 to Hamanaka et al. [cited in the Information Disclosure Statement filed 3/19/04] (Hamanaka).

Hawkins discloses a method of making an imager comprising the steps of providing a semiconductor substrate; forming a plurality of spaced image pixels in the substrate; depositing a dielectric layer over the image pixels and making this layer optically planar by chemical mechanical polishing, thereby forming an optically flat

surface; forming a plurality of depressions in the optically flat surface; uniformly depositing a lens material on the optically flat surface, entirely filling the depressions; and forming the lens material, wherein the disclosed lens materials include titanium oxide. Furthermore, in one embodiment the step of forming a plurality of depressions in the optically flat surface comprises breaking an etching process into several sequential steps. See the abstract; column 3, lines 32-50; column 4, line 32 to column 7, line 29; and Figures 3A-L and 4A-G. However, Hawkins does not disclose forming a plurality of depressions in the optically flat surface by depositing and patterning a photoresist layer overlying the transparent (i.e. dielectric) material to form openings to expose the transparent material; introducing a first isotropic etching into the openings; stripping the photoresist; and exposing the transparent material to a second isotropic etchant.

Hamanaka discloses a method of manufacturing a flat plate microlens comprising the steps of providing a mask on the surface of a glass substrate; isotropically etching the glass substrate utilizing HF as the etchant to form recess portions of hemispherical shape; removing the mask; and again treating the substrate surface with the etchant, thereby thinning the glass substrate and flattening the hemispherical shape of the recess portions. See the abstract; column 9, lines 24-53; and Figures 1, 2 and 3(a)-(b). It would have been obvious to one skilled in the requisite art to isotropically etch through a mask, remove the mask, and isotropically etch again, as taught by Hamanaka, in the process of Hawkins because it is taught that etching through a mask, removing the mask, and etching again provides for the formation of a dense microlens array wherein lens portions having a flattened shape are aligned closely without gaps between them

by a simpler method which does not require separate plasma etching of an etch stop layer, so as to alter the size of the openings, between the multiple isotropic etchings of the dielectric layer.

8. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0211884 to Fang et al. (Fang) in view of US 4,347,918 to Hamanaka et al. [cited in the Information Disclosure Statement filed 3/19/04] (Hamanaka).

Fang discloses a method of making a photo sensor comprising the steps of providing a substrate; fabricating an active circuit atop the substrate that includes at least one photocell; depositing a spacer layer atop the photocell; depositing a photoresist layer atop the space layer; lithographically patterning the photoresist layer to produce an etch mask having an opening above the photocell; isotropically etching the spacer layer through the opening using hydrofluoric acid; stripping away the resist; depositing a conformal layer having a relatively high index of refraction; performing a CMP step to planarize the upper surface and define the final shape of a microlens. See the abstract; paragraphs [0031]-[0039] and claims 14-20 of Fang. However, Fang does not disclose the step of performing a second isotropic etch to increase the radius of the lens shape.

Hamanaka discloses a method of manufacturing a flat plate microlens comprising the steps of providing a mask on the surface of a glass substrate; isotropically etching the glass substrate utilizing HF as the etchant to form recess portions of hemispherical shape; removing the mask; and again treating the substrate surface with the etchant,

thereby thinning the glass substrate and flattening the hemispherical shape of the recess portions. See the abstract; column 9, lines 24-53; and Figures 1, 2 and 3(a)-(b). It would have been obvious to one skilled in the requisite art to isotropically etch through a mask, remove the mask, and isotropically etch again, as taught by Hamanaka, in the process of Fang because it is taught that etching through a mask, removing the mask, and etching again provides for the formation of a dense microlens array wherein lens portions having a flattened shape are aligned closely without gaps between them.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. McPherson whose telephone number is (571) 272-1386. The examiner can normally be reached on Monday through Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

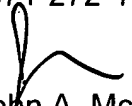
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Application/Control Number: 10/805,115

Page 8

Art Unit: 1756

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John A. McPherson
Primary Examiner
Art Unit 1756

JAM
2/5/07